

ABSTRACT

A light modulator has one or more gratings and one or more MEMS actuators operable to move the gratings for selectively modulating light from an input light source. Certain embodiments have a plurality of blazed gratings arranged parallel to a plane and movable linearly parallel to the plane by MEMS actuators. Each of the gratings is individually blazed for light of a selected color such as red, green or blue. Associated with the gratings may be portions providing black and/or white outputs. An aperture spaced apart from the plane allows color(s) selected from an input white-light source to be directed to an output. An array of MEMS-actuated modulation devices provides a color spatial light modulator. Other embodiments have a grating adapted to be tilted by a MEMS actuator, either continuously through a range of angles or to a selected angle of a set of predetermined discrete angles, to direct selected wavelengths diffracted by the grating toward collection optics for a modulated light output. Methods specially adapted for making and using such light modulators are disclosed.

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